

VS Id#	Vital Sign Category			Vital Sign	Network Rank	HALE
H12	Park Use & Activities			Coral/Sand Mining Harvest	1.2	
H14	Park Use & Activities			Culturally Significant Vertebrate Species Harvest	1.6	
H15	Park Use & Activities			Reef Fisheries Harvest	2.6	
P40	Geology	Landforms		Dune Change (erosion & accretion)	0.9	
P41	Geology	Landforms		Permafrost on Big Island summits	0.0	
T24	Terrestrial Ecosystems	Consumers	Population	Herps (native)	1.7	
F4	Freshwater Ecosystems	Consumers	Population	Amphidromous Fauna Size-Age Structure, Reproduction and Recruitment	2.1	4.5
H07	Park Use & Activities			Litter/debris	3.1	4.5
H09	Park Use & Activities			Footprint & Visitor Use Patterns	3.3	4.5
H16	Management Zones			Management Zone uses	3.1	4.5
P07	Climate & Air Quality			Weather & Climate	3.4	4.5
T06	Terrestrial Ecosystems	Vegetation	Community	Terrestrial Plant Biodiversity	3.6	4.5
T07	Terrestrial Ecosystems	Vegetation	Community	Long-term Plant Succession	3.5	4.5
T08	Terrestrial Ecosystems	Vegetation	Community	Recovery/Change of Native Vegetation with Alien Plant Control	3.5	4.5
T09	Terrestrial Ecosystems	Vegetation	Community	Recovery/Change of Native Vegetation with Feral Ungulate Control	2.4	4.5
T13	Terrestrial Ecosystems	Vegetation	Population	Native Plant Species Protection (T, E, S-o-C species)	4.0	4.5
T14	Terrestrial Ecosystems	Vegetation	Population	Established Plant Disease & Pathogens	2.9	4.5
T16	Terrestrial Ecosystems	Vegetation	Population	Established Alien Species - Plants	4.0	4.5
T17	Terrestrial Ecosystems	Vegetation	Population	Alien Incipient Invasive Plants	3.7	4.5
T19	Terrestrial Ecosystems	Consumers	Community	Terrestrial Vertebrate (including off-shore islets refugia) Biodiversity	3.3	4.5
T21	Terrestrial Ecosystems	Consumers	Community	Recovery/change of Native Wildlife and habitats (including wetlands) with restoration of native vegetation	3.2	4.5
T23	Terrestrial Ecosystems	Consumers	Population	Forest Birds and Bats (includes T & E spp.)	3.1	4.5
T25	Terrestrial Ecosystems	Consumers	Population	Invertebrate Charismatic or Species of Concern	3.2	4.5
T26	Terrestrial Ecosystems	Consumers	Population	Seabirds (including T & E spp.)	3.5	4.5
T29	Terrestrial Ecosystems	Consumers	Population	Terrestrial Invertebrate Species Protection (T, E, S-o-C Species)	2.9	4.5
T30	Terrestrial Ecosystems	Consumers	Population	Established Disease & Pathogens of Terrestrial Vertebrates	2.5	4.5
T32	Terrestrial Ecosystems	Consumers	Population	Established Alien Species - Feral Ungulates	2.4	4.5
T34	Terrestrial Ecosystems	Consumers	Population	Established Alien Species - Predatory Terrestrial Vertebrates	3.4	4.5
T37	Terrestrial Ecosystems	Consumers	Population	Alien Incipient Invasives - Predatory Terrestrial Vertebrate	3.3	4.5
T39	Terrestrial Ecosystems	Consumers	Population	Alien Incipient Invasives - Terrestrial Invertebrates	2.2	4.5
T40	Terrestrial Ecosystems	Consumers	Population	Alien Incipient Invasives - Vertebrates	2.6	4.5
H06	Land Use			Land Use(s) Within & Surrounding Parks	3.4	4.3
H17	Management Zones			Wilderness Areas - HAVO, HALE, other Unofficial	1.1	4.3
T02	Terrestrial Ecosystems	Vegetation	Landscape	Ecozone Boundaries	2.1	4.1
T03	Terrestrial Ecosystems	Vegetation	Landscape	Landscape Fragments, Patch Size, Land Cover	2.6	4.1
T04	Terrestrial Ecosystems	Vegetation	Landscape	Fire Effects & Dynamics: Vegetation and Landscape Level	2.5	4.1
T18	Terrestrial Ecosystems	Consumers	Community	Terrestrial Invertebrate Biodiversity	2.9	4.1
T28	Terrestrial Ecosystems	Consumers	Population	Terrestrial Invertebrates Associated with Habitat Quality	2.7	4.1
T38	Terrestrial Ecosystems	Consumers	Population	Alien Incipient Invasives - Fungi	2.0	4.1
H03	Viewscapes / Lightscapes			Lightscape & Night sky	2.7	4.0
H04	Land Use			Alien Invasive Species Points of Entry	3.4	4.0
P12	Soil, Water, & Nutrient Dynamics			Soil Erosion	2.9	4.0
P17	Soil, Water, & Nutrient Dynamics			Flowing surface water hydrology	2.7	4.0
P19	Soil, Water, & Nutrient Dynamics			Groundwater dynamics	2.4	4.0
T01	Terrestrial Ecosystems	Vegetation	Landscape	Soil and Pollen Landscape History	2.3	4.0
T05	Terrestrial Ecosystems	Vegetation	Landscape	Forest Dieback	1.5	4.0
T20	Terrestrial Ecosystems	Consumers	Community	Recovery/Change of Native Invertebrates Communities with Native Plant Restoration	2.5	4.0
T27	Terrestrial Ecosystems	Consumers	Population	Shorebirds and Waterbirds (including T & E spp.)	3.3	4.0
T33	Terrestrial Ecosystems	Consumers	Population	Established Alien Species - Invasive Terrestrial Invertebrate Pests of natural systems	2.4	4.0
F2	Freshwater Ecosystems	Consumers	Community	Aquatic and Riparian Species (vertebrate and invertebrate) Biodiversity	3.5	3.8
P26	Water Quality			Ground Water Quality - Microbiology	2.9	3.8
T10	Terrestrial Ecosystems	Vegetation	Community	Recovery/Change of Native Vegetation with Invasive Alien Invertebrate Control	1.8	3.8
T15	Terrestrial Ecosystems	Vegetation	Population	Alien Incipient Plant Disease & Pathogens	2.6	3.8
T31	Terrestrial Ecosystems	Consumers	Population	Alien Incipient Disease & Pathogens of Terrestrial Vertebrates	2.5	3.8
P31	Water Quality			Surface Water Quality - Toxics & contaminants	3.7	3.6
H05	Land Use			Water Use(s) Within & Surrounding Parks	3.0	3.5
P01	Climate & Air Quality			Visibility	2.9	3.5
P11	Soil, Water, & Nutrient Dynamics			Biogeochemical Cycles - Nutrient Cycling	2.5	3.5
P22	Water Quality			Surface Water Quality Core parameters	3.6	3.5
T11	Terrestrial Ecosystems	Vegetation	Population	Invertebrate Biocontrol of Plants	1.7	3.5
F5	Freshwater Ecosystems	Consumers	Population	Established Alien Species - Predatory Freshwater (vertebrate and invertebrate)	2.9	3.3
H10	Park Use & Activities			Subsistence Farming/Agriculture	1.2	3.3
P13	Soil, Water, & Nutrient Dynamics			Soil Quality - Biological	1.7	3.3
P16	Soil, Water, & Nutrient Dynamics			Soil Crust Change (Arid-Semiarid habitats)	0.9	3.3
P25	Water Quality			Surface Water Quality Supplemental parameters	3.5	3.3
P28	Water Quality			Surface Water Quality - Microbiology	2.9	3.3
P42	Geology	Landforms		Cave Environmental conditions	2.0	3.3
T12	Terrestrial Ecosystems	Vegetation	Population	Plant Pathogen Biocontrol of Plants	1.6	3.3
T22	Terrestrial Ecosystems	Consumers	Population	Invertebrate Biocontrol of Invertebrates	1.7	3.3
T35	Terrestrial Ecosystems	Consumers	Population	Established Alien Species - Terrestrial Invertebrate Pests (agricultural)	1.8	3.3
H02	Viewscapes / Lightscapes			Viewsheds	2.7	3.2
P09	Climate & Air Quality			Climate Representations - 2- & 3- dimensional	1.7	3.1
P18	Soil, Water, & Nutrient Dynamics			Wetlands (incl. anchialine pools) hydrology	3.2	3.1
P27	Water Quality			Marine Water Quality - Microbiology	2.8	3.1
P02	Climate & Air Quality			Atmospheric Deposition: Wet (direct & occult) and Dry	2.1	3.1
P03	Climate & Air Quality			Atmospheric Gases: Climate Change Indicators, Human Pollutants, Natural-Volcanic	2.2	3.1
P05	Climate & Air Quality			Atmospheric Particulates: Climate Change Indicators, Human Pollutants, Natural-Volcanic	2.2	3.1
H13	Park Use & Activities			Culturally Significant Plant Harvest	2.5	3.0
P06	Climate & Air Quality			Solar radiation	2.7	3.0
T41	Terrestrial Ecosystems	Cave Systems	Community	Cave & lava tube communities	2.0	3.0
M15	Marine Ecosystems	Water column (motile)	Population	Established Marine Animal (other than turtles) Disease & Pathogens	1.9	2.8
M19	Marine Ecosystems	Water column (motile)	Population	Fish Growth/Size and Age Structure, and Recruitment	3.2	2.8
P08	Climate & Air Quality			Extreme events (weather & ocean)	3.0	2.8
P14	Soil, Water, & Nutrient Dynamics			Soil Quality- Chemical	1.9	2.8
P20	Water Quality			Ground Water Quality Core parameters	2.8	2.8
P29	Water Quality			Ground Water Quality - Toxics & contaminants	2.8	2.8
P34	Geology	Hazards		Volcanic Unrest - Ground Deformation	1.4	2.8
P38	Geology	Hazards		Mass Geologic Wasting	1.6	2.8
P43	Geology	Landforms		Cave Geology: non-karst	2.2	2.8
M20	Marine Ecosystems	Water column (motile)	Population	Marine Species Protection (T, E, S-o-C species)	3.3	2.7
P04	Climate & Air Quality			Marine Aerosols	1.4	2.7
T36	Terrestrial Ecosystems	Consumers	Population	Established Alien Species - Terrestrial Invertebrate Pests (human structures)	1.9	2.7
P10	Soil, Water, & Nutrient Dynamics			Ocean/Physical Dynamics: Currents, Sea Level, Tides/Swell	2.7	2.6
P23	Water Quality			Ground Water Quality Supplemental parameters	2.6	2.6
H01	Soundscapes			Alien, Natural, Human Soundscapes	2.6	2.6
F1	Freshwater Ecosystems	Producers		Community dynamics of primary producers	2.5	2.5
F3	Freshwater Ecosystems	Consumers	Population	Freshwater Animals Disease & Pathogen	2.2	2.5
F6	Freshwater Ecosystems	Consumers	Population	Alien Incipient Invasives - Predatory Freshwater (vertebrate and invertebrate)	2.8	2.5

VS Id#	Vital Sign Category			Vital Sign	Network Rank	HALE
M01	Marine Ecosystems	Benthic	Landscape	Coral Growth (erosion & accretion)	2.7	2.5
M02	Marine Ecosystems	Benthic	Landscape	Benthic Habitats	2.6	2.5
M03	Marine Ecosystems	Benthic	Community	Benthic Marine Invertebrates and Algae Biodiversity	2.8	2.5
M04	Marine Ecosystems	Benthic	Community	Subtidal - Hard Bottom (coral reef, colonized basalt, etc.)	2.7	2.5
M05	Marine Ecosystems	Benthic	Community	Subtidal - Soft Bottom (sand flat, seagrass bed)	2.4	2.5
M06	Marine Ecosystems	Benthic	Population	Benthic Reef Fisheries / Collected species (inverts: sea cucumbers, pololo worm, corals; etc)	2.7	2.5
M07	Marine Ecosystems	Benthic	Population	Benthic Marine Invertebrates and Algae	2.7	2.5
M10	Marine Ecosystems	Benthic	Population	Alien Incipient Coral Disease & Pathogens	2.5	2.5
M11	Marine Ecosystems	Benthic	Population	Established Alien Species - Benthic Marine	2.7	2.5
M12	Marine Ecosystems	Benthic	Population	Alien Incipient Invasives - Benthic Marine	2.8	2.5
M16	Marine Ecosystems	Water column (motile)	Population	Established Turtle Disease & Pathogens	2.9	2.5
M18	Marine Ecosystems	Water column (motile)	Population	Water Column Marine Invertebrates	2.8	2.5
M22	Marine Ecosystems	Intertidal	Community	Intertidal Biodiversity - Vertebrates, Invertebrates, and Algae	3.1	2.5
M23	Marine Ecosystems	Intertidal	Community	Intertidal - Hard Bottom	2.2	2.5
M24	Marine Ecosystems	Intertidal	Community	Intertidal - Soft Bottom (sand beach, mudflat, mangrove)	2.6	2.5
M25	Marine Ecosystems	Intertidal	Population	Intertidal Reef Fisheries / Collected species (limu, opihi, crabs, fish, etc.)	2.3	2.5
M26	Marine Ecosystems	Intertidal	Population	Intertidal Marine Invertebrates, Fish, and Algae	3.0	2.5
M27	Marine Ecosystems	Intertidal	Population	Established Alien Species - Intertidal Marine	2.5	2.5
M28	Marine Ecosystems	Intertidal	Population	Alien Incipient Invasives - Intertidal Marine	2.6	2.5
P15	Soil, Water, & Nutrient Dynamics			Soil Quality- Physical	2.3	2.5
P32	Water Quality			Marine Water Quality - macroinvertebrates	2.8	2.5
P33	Water Quality			Surface Water Quality - macroinvertebrates	2.6	2.5
P39	Geology	Landforms		Coastal Shoreline Change (erosion & accretion)	3.2	2.5
P44	Geology	Landforms		Cave Geology: karst	0.9	2.5
M13	Marine Ecosystems	Water column (motile)	Community	Water Column Marine Vertebrates and Invertebrates Biodiversity	2.8	2.3
M14	Marine Ecosystems	Water column (motile)	Population	Water Column Reef Fisheries	2.2	2.3
M17	Marine Ecosystems	Water column (motile)	Population	Established Alien Species - Water Column Marine	2.5	2.3
M21	Marine Ecosystems	Water column (motile)	Population	Alien Incipient Invasives - Water Column Marine	2.1	2.3
P35	Geology	Hazards		Volcanic Unrest - Lava Flows	1.2	2.3
P36	Geology	Hazards		Seismicity of Non-Volcanic Origin	1.9	2.3
P37	Geology	Hazards		Seismicity of Volcanic Origin	1.8	2.3
H11	Park Use & Activities			Bio-prospecting Harvest	1.9	2.0
M08	Marine Ecosystems	Benthic	Population	Coral Growth/Size and Age Structure, and Recruitment	2.6	2.0
M09	Marine Ecosystems	Benthic	Population	Established Coral Disease & Pathogens (including bleaching)	2.4	2.0
P21	Water Quality			Marine Water Quality Core parameters	3.3	2.0
P24	Water Quality			Marine Water Quality Supplemental parameters	2.9	2.0
P30	Water Quality			Marine Water Quality - Toxics & contaminants	3.0	2.0
H08	Park Use & Activities			Marine Recreational Activities & Groundings/Anchor Damage	2.5	1.0